

Pushing the Envelope			
2009 Mathematics			
Standards of Learning			
<b>Virginia Mathematics</b>			
<b>Grade 5</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
History of Aviation Propulsion (pgs. 5-9)	VA	MA.5.5.10	The student will determine an amount of elapsed time in hours and minutes within a 24-hour period.
Chemistry (pgs. 25-41)	VA	MA.5.5.8.a	The student will describe and determine the perimeter of a polygon and the area of a square, rectangle, and right triangle, given the appropriate measures. Find perimeter, area, and volume in standard units of measure.
Chemistry (pgs. 25-41)	VA	MA.5.5.8.b	The student will describe and determine the perimeter of a polygon and the area of a square, rectangle, and right triangle, given the appropriate measures. Differentiate among perimeter, area, and volume and identify whether the application of the concept of perimeter, area, or volume is appropriate for a given situation.
Physics and Math (pgs. 43-63)	VA	MA.5.5.18.a	The student will describe and determine the perimeter of a polygon and the area of a square, rectangle, and right triangle, given the appropriate measures. Investigate and describe the concept of variable.
Physics and Math (pgs. 43-63)	VA	MA.5.5.18.b	The student will describe and determine the perimeter of a polygon and the area of a square, rectangle, and right triangle, given the appropriate measures. Write an open sentence to represent a given mathematical relationship, using a variable.
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2009 Mathematics			
Standards of Learning			
<b>Virginia Mathematics</b>			
<b>Grade 6</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Chemistry (pgs. 25-41)	VA	MA.6.6.10.d	The student will estimate and then determine length, weight/mass, area, and liquid volume/capacity, using standard and nonstandard units of measure. Describe and determine the volume and surface area of a rectangular prism.
Physics and Math (pgs. 43-63)	VA	MA.6.6.1	The student will describe and compare data, using ratios, and will use appropriate notations, such as a/b, a to b, and a:b.

Physics and Math (pgs. 43-63)	VA	MA.6.6.2.a	The student will identify representations of a given percent and describe orally and in writing the equivalence relationships among fractions, decimals, and percents.
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<b>2009 Mathematics</b>			
<b>Standards of Learning</b>			
<b>Virginia Mathematics</b>			
<b>Grade 7</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Types of Engines (pgs. 11-23)	VA	MA.7.7.13.b	The student will evaluate algebraic expressions for given replacement values of the variables.
Chemistry (pgs. 25-41)	VA	MA.7.7.5.a	The student will describe volume and surface area of cylinders.
Chemistry (pgs. 25-41)	VA	MA.7.7.5.b	The student will solve practical problems involving the volume and surface area of rectangular prisms and cylinders.
Chemistry (pgs. 25-41)	VA	MA.7.7.5.c	The student will describe how changing one measured attribute of a rectangular prism affects its volume and surface area.
Chemistry (pgs. 25-41)	VA	MA.7.7.13.b	The student will evaluate algebraic expressions for given replacement values of the variables.
Physics and Math (pgs. 43-63)	VA	MA.7.7.13.b	The student will evaluate algebraic expressions for given replacement values of the variables.
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<b>2009 Mathematics</b>			
<b>Standards of Learning</b>			
<b>Virginia Mathematics</b>			
<b>Grade 8</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Types of Engines (pgs. 11-23)	VA	MA.8.8.4	The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables.
Types of Engines (pgs. 11-23)	VA	MA.8.8.10.b	The student will apply the Pythagorean Theorem to find the missing length of a side of a right triangle when given the lengths of the other two sides.
Chemistry (pgs. 25-41)	VA	MA.8.8.4	The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables.
Chemistry (pgs. 25-41)	VA	MA.8.8.7.a	The student will Investigate and solve practical problems involving volume and surface area of prisms, cylinders, cones, and pyramids.
Chemistry (pgs. 25-41)	VA	MA.8.8.7.b	The student will describe how changing one measured attribute of a figure affects the volume and surface area.
Chemistry (pgs. 25-41)	VA	MA.8.8.10.b	The student will apply the Pythagorean Theorem to find the missing length of a side of a right triangle when given the lengths of the other two sides.

Physics and Math (pgs. 43-63)	VA	MA.8.8.3.a	The student will solve practical problems involving rational numbers, percents, ratios, and proportions.
Physics and Math (pgs. 43-63)	VA	MA.8.8.4	The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables.
Physics and Math (pgs. 43-63)	VA	MA.8.8.10.b	The student will apply the Pythagorean Theorem to find the missing length of a side of a right triangle when given the lengths of the other two sides.
Rocket Activity (pgs. 69-75)	VA	MA.8.8.10.b	The student will apply the Pythagorean Theorem to find the missing length of a side of a right triangle when given the lengths of the other two sides.
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<b>2009 Mathematics</b>			
<b>Standards of Learning</b>			
<b>Virginia Mathematics</b>			
<b>Grades 9-12 (Algebra I)</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Types of Engines (pgs. 11-23)	VA	MA.9-12.A.1	The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.
Types of Engines (pgs. 11-23)	VA	MA.9-12.A.7.e	The student will investigate and analyze function (linear and quadratic) families and their characteristics both algebraically and graphically, including, finding the values of a function for elements in its domain.
Chemistry (pgs. 25-41)	VA	MA.9-12.A.1	The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.
Chemistry (pgs. 25-41)	VA	MA.9-12.A.7.e	The student will investigate and analyze function (linear and quadratic) families and their characteristics both algebraically and graphically, including, finding the values of a function for elements in its domain.
Physics and Math (pgs. 43-63)	VA	MA.9-12.A.1	The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.
Physics and Math (pgs. 43-63)	VA	MA.9-12.A.2.c	The student will perform operations on polynomials, including factoring completely first- and second-degree binomials and trinomials in one or two variables. Graphing calculators will be used as a tool for factoring and for confirming algebraic factorizations.

Physics and Math (pgs. 43-63)	VA	MA.9-12.A.6.a	The student will graph linear equations and linear inequalities in two variables, including determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line. Slope will be described as rate of change and will be positive, negative, zero, or undefined.
Physics and Math (pgs. 43-63)	VA	MA.9-12.A.7.e	The student will investigate and analyze function (linear and quadratic) families and their characteristics both algebraically and graphically, including finding the values of a function for elements in its domain.
Physics and Math (pgs. 43-63)	VA	MA.9-12.A.7.f	The student will investigate and analyze function (linear and quadratic) families and their characteristics both algebraically and graphically, including making connections between and among multiple representations of functions including concrete, verbal, numeric, graphic, and algebraic.
<b>Pushing the Envelope</b>			
<b>2009 Mathematics</b>			
<b>Standards of Learning</b>			
<b>Virginia Mathematics</b>			
<b>Grades 9-12 (Algebra, Functions, and Data Analysis)</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Types of Engines (pgs. 11-23)	VA	MA.9-12.AFDA.4	The student will transfer between and analyze multiple representations of functions, including algebraic formulas, graphs, tables, and words. Students will select and use appropriate representations for analysis, interpretation, and prediction.
Chemistry (pgs. 25-41)	VA	MA.9-12.AFDA.4	The student will transfer between and analyze multiple representations of functions, including algebraic formulas, graphs, tables, and words. Students will select and use appropriate representations for analysis, interpretation, and prediction.
Physics and Math (pgs. 43-63)	VA	MA.9-12.AFDA.4	The student will transfer between and analyze multiple representations of functions, including algebraic formulas, graphs, tables, and words. Students will select and use appropriate representations for analysis, interpretation, and prediction.
Rocket Activity (pgs. 69-75)	VA	MA.9-12.AFDA.4	The student will transfer between and analyze multiple representations of functions, including algebraic formulas, graphs, tables, and words. Students will select and use appropriate representations for analysis, interpretation, and prediction.
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